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Hazardous Waste Technical Assistance Survey
Little Rock AFB AR

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May 1990

Final Report

AF Occupational and Environmental Health Laboratory (AFSC)
Human Systems Division
Brooks Air Force Base, Texas 78235-5501

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At the request of HQ MAC/LGMW through HQ MAC/SGPB, the AFOEHL conducted a hazardous waste technical assistance survey at Little Rock AFB (LRAFB) from 5-9 Feb 90. The scope of this survey was to address hazardous waste management practices, explore opportunities for hazardous waste minimization, and to determine possible industrial discharge to the sanitary sewer. The survey team performed a shop-by-shop evaluation of chemical waste management practices as well as met with hazardous waste managers and engineers to discuss the hazardous waste program. Recommendations include: (1) Move the 314 FMS AGE waste oil storage area to a site other than the washrack; (2) Construct a sink for neutralizing lead-acid batteries at 314 CES Power Production; (3) Contain and reuse triple-rinse water at 314 CES Entomology; (4) Use an alternate absorbent material rather than Speedy Dry; (5) Perform stripping operations at 189 ANG Corrosion Control in a tank rather than on the washrack.

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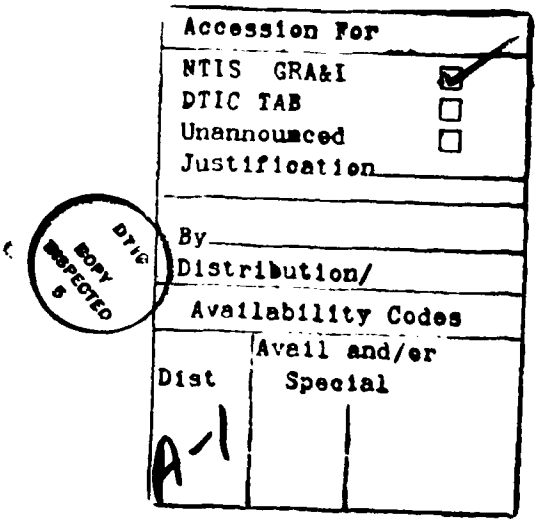

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I. INTRODUCTION

The Weapons Systems Division, Director of Maintenance Engineering, Headquarters Military Airlift Command (HQ MAC/LGMW) requested the Air Force Occupational and Environmental Health Laboratory, Environmental Quality Division (AFOEHL/EQE), conduct a series of five Hazardous Waste Technical Assistance Surveys throughout MAC during 1990 (Appendix A). Little Rock AFB was the first of these surveys. HQ MAC/LGMW is the office of primary responsibility (OPR) for the command-wide waste minimization program. The Hazardous Waste Technical Assistance Surveys will be used to establish a baseline for their waste minimization program. The scope of the Hazardous Waste Technical Assistance Survey is to address hazardous waste management practices, evaluate opportunities for waste minimization, and determine possible industrial discharges to the sanitary sewer.

The survey was conducted by Capt Patrick T. McMullen and 1Lt Nancy S. Hedgecock from 5-9 Feb 90.

II. BACKGROUND

A. Base Description

Little Rock AFB is located in the center of the state of Arkansas, 17 miles north of the state capital. The 314th Tactical Airlift Wing is the host unit at Little Rock AFB and is responsible for airlifting supplies and people throughout the world. Tenants include the 50th and 61st Tactical Airlift Squadrons, 34th Technical Training Squadron, 1314th Ground Combat Readiness and Evaluation Squadron and Headquarters, Joint Readiness Training Center.

B. Hazardous Waste Program

The hazardous waste program at Little Rock AFB is managed primarily through the Environmental and Contract Planning Office in Civil Engineering, 314 CES/DEEV. The Defense Reutilization and Marketing Office (DRMO) is responsible for contractual removal of wastes. Bioenvironmental Engineering Services (BES) helps monitor the program through industrial shop surveys and is responsible for waste sampling at the request of DEEV.

Individual shops are responsible for identifying, segregating, handling, packaging, and labeling the wastes generated by their shop. The wastes are usually placed in a 55-gallon drum or bowser located either at a satellite accumulation site or at an accumulation site.

When wastes require disposal, the generator completes an AF Form 2005 and submits it to Base Supply. Supply generates a DD Form 1348-1 using the information contained on the AF Form 2005. The DD Form 1348-1 is approved by the Environmental Coordinator indicating that funds are available for disposal of the waste. The generator contacts the 314 CES Water Shop to arrange for the waste containers to be inspected before they are transported to DRMO (314 CES Water Shop is responsible for performing waste container inspections).

Once the inspections are completed, the generator transports the waste to DRMO and submits the DD Form 1348-1 to DRMO who arranges for a waste disposal contractor to pick up the wastes.

Waste oil is sold to various waste oil disposal contractors for 3 to 8 cents per gallon. The market for waste oil determines the payment received. Other wastes are disposed of at a cost to the base.

Wastes are identified by either wastestream analysis or user's knowledge before being transferred to the DRMO Storage Facility. BES is responsible for sampling unknown wastes and other wastestreams on an as needed basis. Samples are sent to the AF Occupational and Environmental Health Laboratory, Analytical Services Division (AFOEHL/SA) for analyses. Results are sent back to BES who notifies DEEV of the results.

III. PROCEDURE

The first step of the survey was to review the base's hazardous waste management plan and the Bioenvironmental Engineer's industrial shop folders to determine which shops generate chemical wastes. Next, 34 industrial shops were visited to observe industrial operations, discuss chemical waste disposal practices with shop personnel, and hand out chemical disposal survey forms (Appendix B). The forms, completed by shop personnel, were returned to the survey team for review. They provided additional information for subsequent discussions with shop personnel.

Also, the DRMO Hazardous Waste Storage Facility (HWSF) and each accumulation site were visited and evaluated. The accumulation sites were evaluated by using an evaluation form included as Appendix C.

The following individuals were contacted to discuss their responsibility and involvement in the hazardous waste program:

Maj Allan Howard, Chief Bioenvironmental Engineering, SGPB, AUTOVON 731-7398

2Lt Jerry Bogert, OIC, Bioenvironmental Engineering, SGPB, AUTOVON 731-7398

Mr Malcom Windsor, Environmental Coordinator, DEEV, AUTOVON 731-6434

Ms Ella Moody, Defense Reutilization and Marketing Office, AUTOVON 731-3715

Based on the data from the completed chemical disposal survey forms and interviews with shop personnel, the annual forecasted quantities for eight categories of waste were determined (see Table 1). From Table 1, column 3, the majority of the waste, 53.9% consists of waste paint products; however, 98% of this waste is water that is drained from the waterfall paint booth. Four percent of the total amount of waste generated is drummed and disposed through DRMO. Itemized listings of wastes (including categories, shop, amount of waste, and disposal method) are found in Appendix D. Appendix E lists those wastes drummed for disposal as hazardous waste through DRMO.

Table 1. Annual Forecasted Quantities for Waste Categories at Little Rock AFB

PRODUCT	TOTAL WASTE (GAL/YR)	%TOTAL	TOTAL DRUMMED WASTE (GAL/YR)	%TOTAL
Oil & Fluid	18186	15.9	0	0
Paint Waste	61420	53.9	1420	35
Fuels	10990	9.7	0	0
Solvents	2765	2.4	1400	35
Antifreeze	408	0.3	0	0
Batteries	360*	-	-	-
Soaps	17036	14.9	0	0
Photo & NDI	3128	2.8	1200	30
TOTAL:	113933		4020	

* Number/Year rather than Gallons/Year

IV. DESCRIPTION OF INDUSTRIAL ACTIVITIES

Industrial Shops: This section details the results of the shop-by-shop chemical usage and disposal practice survey of the following industrial shops (Appendix F contains a master list of shops surveyed and Appendix G contains shop-by-shop listing of waste disposal practices).

A. 314 Field Maintenance Squadron (314 FMS)

Shop: Engine Maintenance Bldg: 356
Contact: Sgt Kamak AUTOVON: 731-6944

Shop personnel perform routine maintenance on T56-7 and T56-15 engines. JP-4 (55 gallons/month) drained from the engines is collected in buckets which are emptied into a bowser located at the shop's accumulation site (see Figure 1). The fuel is analyzed by POL. The fuel is usually uncontaminated and is recycled into the base fuel supply. Any fuel contaminated with water or dirt is burned at the fire training pit. Engine oil (250 gallons/month) and hydraulic fluid (100 gallons/month) drained from the engines on the flight line are collected in buckets that are emptied into bowsers. The engine oil and hydraulic fluid are disposed through DRMO as POL. The buckets used for collecting JP-4, engine oil, and hydraulic fluid are maintained as bench stock items and are available for check-out by shop personnel. In order to prevent cross-contamination of wastes, different buckets are used for collecting each waste.

PD-680 (20 gallons/month) is drummed for disposal as hazardous waste through DRMO. The shop has a bearing room; however, since most of the bearings used by the shop are available as bench stock items the bearing room is not used. Cleaning rags and Speedy Dry are disposed as municipal waste.

Omega soap is used for cleaning shop floors. The shop floor drains are connected to an oil/water separator.

Engines (20/month) are washed at the shop washrack using Citrikleen HD (250 gallons/year). The washrack drains are connected through an oil/water separator to the sanitary sewer.

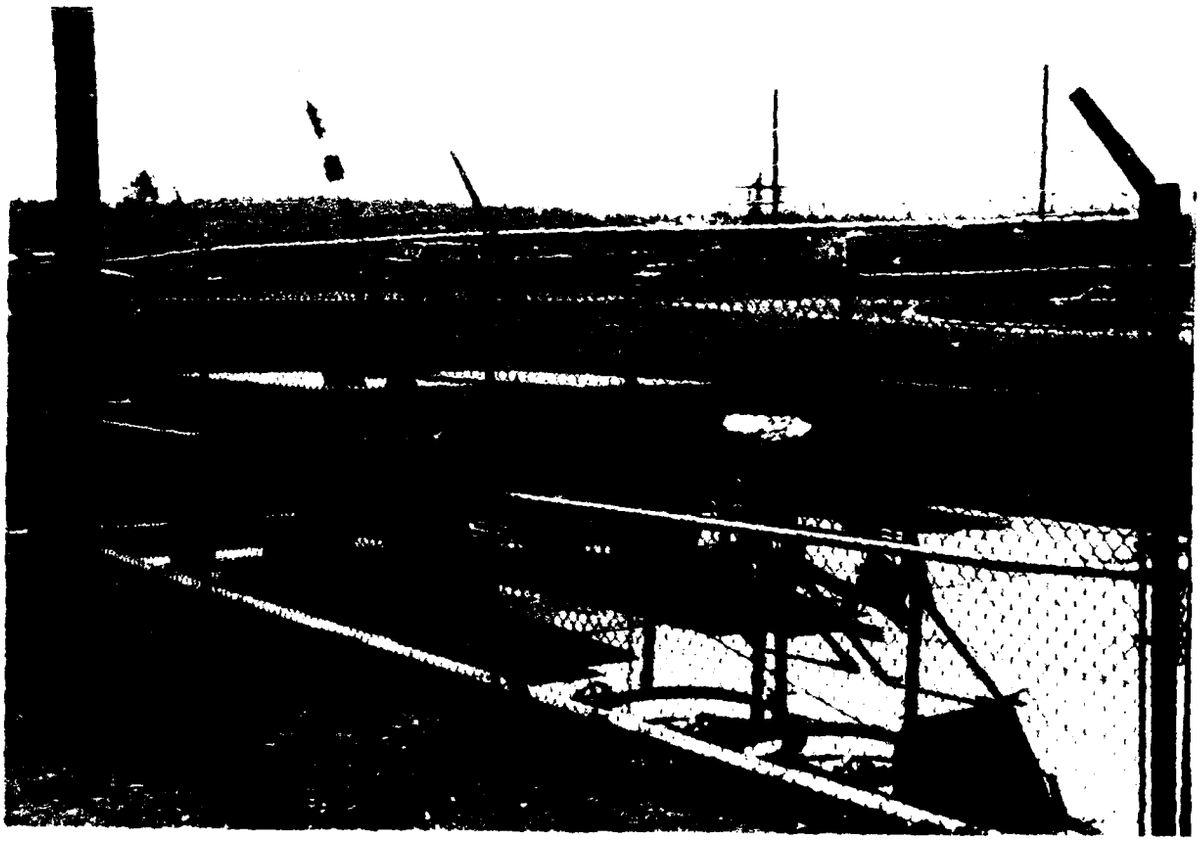

Figure 1: 314 FMS Engine Shop Accumulation Site

Shop:	Test Cell	Bldg:	390
Contact:	MSgt Nifeneger	AUTOVON:	731-6635

Shop personnel perform field tests and engine rev-ups on the T56-7 and T56-15 engine. Approximately 25 engines/month are tested. JP-4 is drained from the engines into 5-gallon cans. Hydraulic fluid (150 gallons/month) is drained from the engines into buckets which are emptied into a bowser. Engine oil (20 gallons/month) is drained directly from the engines into the bowser. All wastes are taken to the Engine Maintenance Shop Accumulation site and put into the appropriate waste container.

Shop: NDI Bldg: 368
Contact: TSgt Phillips AUTOVON: 731-6147

Shop personnel perform inspections of C-130 aircraft structural components using dye penetrant, magnetic particle and x-ray inspection methods. Spent x-ray developer (10 gallons/month) is discharged down the drain to the sanitary sewer. Spent x-ray fixer (20 gallons/month) is processed through a silver recovery unit before being discharged down the drain to the sanitary sewer.

Dye penetrant inspection is an open system using penetrant, emulsifier, and developer. A hydrophilic dye penetrant inspection process is used. Parts are sequentially dipped into the penetrant and the emulsifier then rinsed and allowed to dry. Then, the part is dipped into the developer, passed through a drying oven, inspected, and rinsed. Spent penetrant (400 gallons/year), emulsifier (400 gallons/year), and developer (400 gallons/year) are drummed and disposed as hazardous waste through DRMO. Rinsewater generated during the inspection process is discharged down the drain to an oil/water separator connected to the sanitary sewer.

The magnetic particle inspection is a closed system utilizing oil containing iron fillings along with a large magnet to find flaws in aircraft parts. The spent solution (80 gallons/year) is drummed for disposal as waste POL through DRMO. Used cleaning rags and empty aerosol cans are disposed as municipal waste.

Shop: Corrosion Control Bldg: 350
Contact: MSgt Dickerson AUTOVON: 731-6694

Shop personnel perform corrosion control treatment and painting on C-130 aircraft, associated aircraft parts and support equipment. Waste enamel and lacquer paint and thinner (55 gallons/month) are drummed, stored at the shop's accumulation site, and disposed as hazardous waste through DRMO. Alodine (25 gallons/month) is drummed, stored at the shop's accumulation site (see Figure 2), and disposed as hazardous waste through DRMO. Crushed walnut shells are used for stripping paint from aircraft parts. The waste is disposed as municipal waste. Cleaning rags are put in plastic bags and disposed as municipal waste. The shop has a waterfall paint booth (capacity 1200 gallons) that is drained weekly. Turco Iso-Floc is added to the water; the chemical causes the paint particles to flocculate and settle to the bottom of the booth. Also, the water is filtered before being discharged to the sanitary sewer. The paint sludge is disposed with waste paint.

The shop will be moving to a new facility. The facility will have a dry paint booth and a plastic media blasting unit. Also, polyurethane paint will be used more extensively.

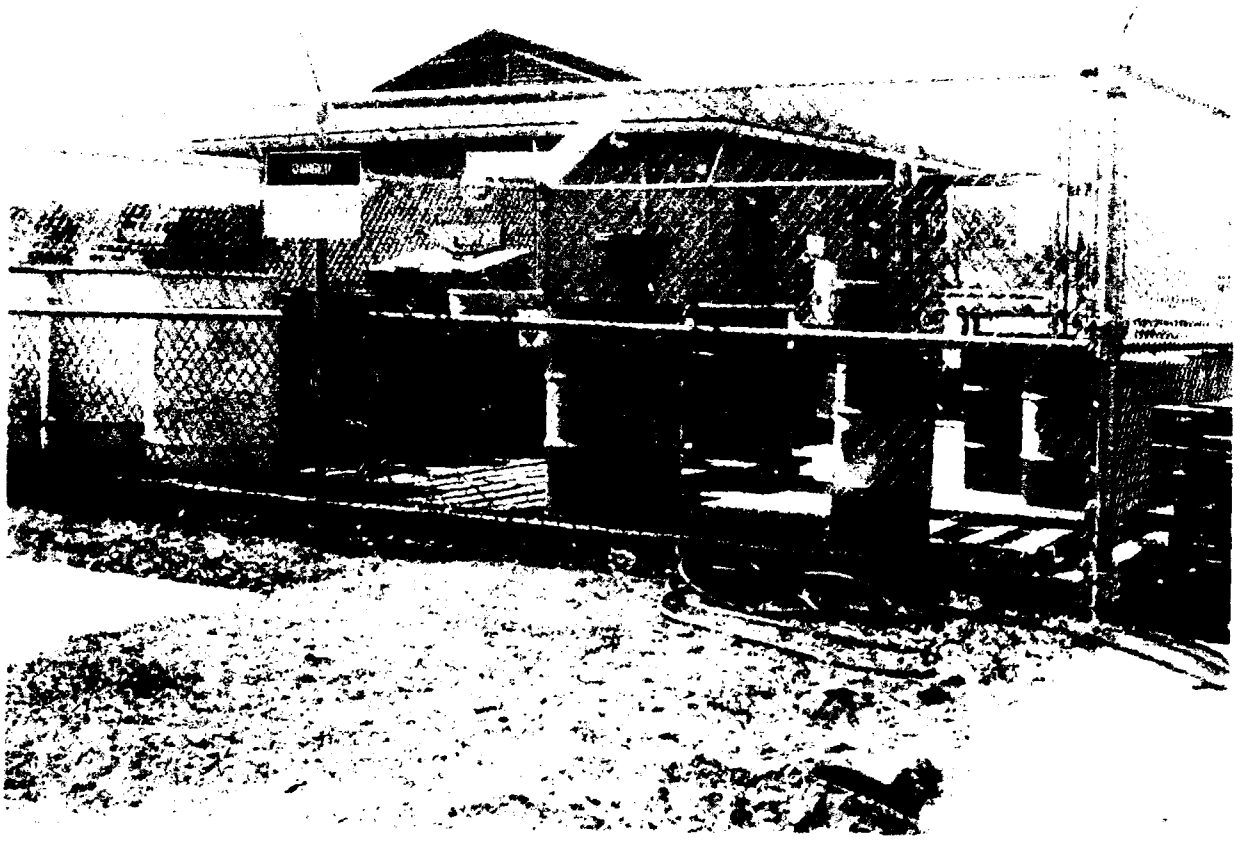

Figure 2: 314 FMS Corrosion Control Accumulation Site

Shop:	Wheel and Tire	Bldg:	250
Contact:	MSgt Guthrie	AUTOVON:	731-6008

Shop personnel assemble, disassemble, and clean wheels and tires for the C-130 aircraft. The shop has a 150-gallon ethanolamine tank that is changed out every six months. The waste is drummed, stored at the building 250 accumulation site (see Figure 3) and disposed as hazardous waste through DRMO. The shop also has a 150-gallon Citrikleen tank used for cleaning bearings and degreasing wheels that is changed out every six months. The waste is discharged to the sanitary sewer system. Used cleaning rags and Speedy Dry are disposed as municipal waste.

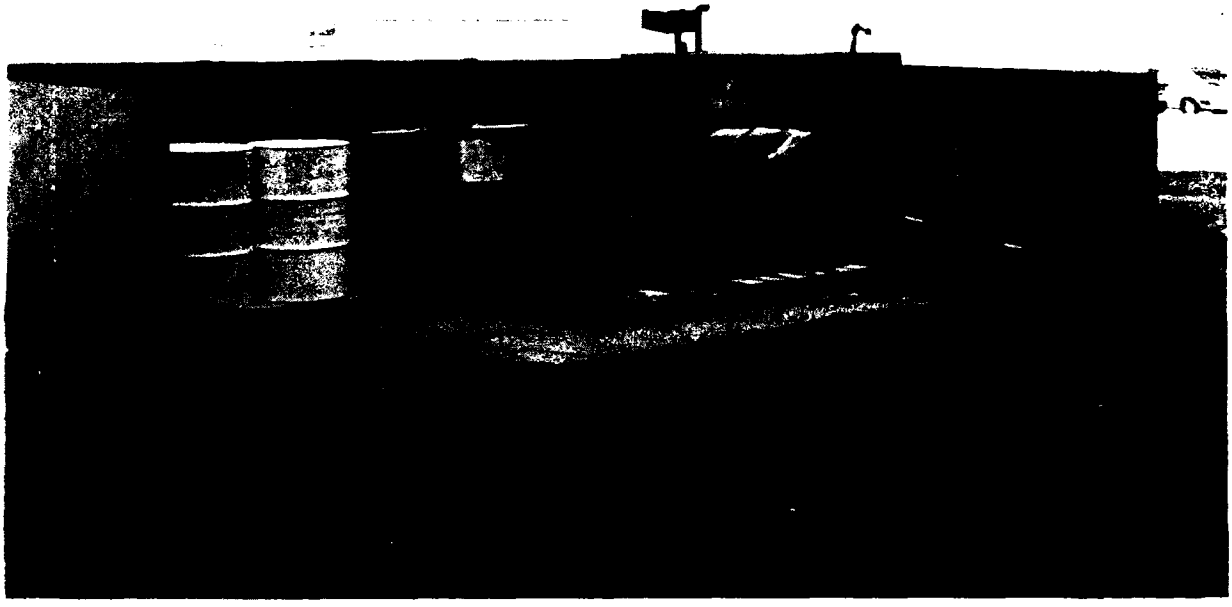

Figure 3: Building 250 Accumulation Site

Shop: Fuel System Repair — Bldg: 280
Contact: SMSgt Cleveland — AUTOVON: 731-3953

Shop personnel perform routine and unscheduled maintenance on C-130 aircraft fuel systems. JP-4 (600 gallons/month) is drained from the fuel tanks into one of three 200-gallon bowsers. The JP-4 is taken to POL, analyzed, and recycled back into the base fuel supply. Cleaning rags are taken to building 250 and disposed with other FMS shop's used rags. The shop's floor drains are connected to an oil/water separator. All other chemicals used in the shop are used in process. The empty containers are disposed as municipal waste.

Shop: Pneudraulics — Bldg: 250
Contact: MSgt Moore — AUTOVON: 731-6058

Shop personnel service, repair, and maintain hydraulic and pneumatic components in the C-130 aircraft. Waste hydraulic fluid (40 gallons/month) is collected in a bucket and transferred to a bowser on the flight line. The shop has a 150 gallon PD-680 tank which is changed out three times per year. The waste is drummed and stored at the 314 FMS accumulation point. Cleaning rags (1 drum/day) are disposed as municipal waste.

Shop: AGE
Contact: Sgt Hoffman

Bldg: 256
AUTOVON: 731-3550

Shop personnel repair, maintain, and dispatch flight line support equipment for C-130 aircraft. Waste synthetic oil, engine oil, and hydraulic fluid (100 gallons/month) are drummed for disposal through DRMO as POL. The wastes are stored at the shop's accumulation site (see Figure 4). The shop has a 10-gallon Citrikleen tank and a 40-gallon Citrikleen tank that are changed out as needed (about every four months). The waste is discharged down the drain to the sanitary sewer system. Aircraft soap (55 gallons/month) and some Citrikleen are used on the washrack for washing AGE. The washrack drains are connected to an oil/water separator. Previously, waste MoGas, JP-4, and diesel (10 gallons/year) were accumulated in 15-gallon drums located at the AGE servicing area. Currently, all fuel drained from AGE fuel tanks is put into a bowser for use in other AGE. Touch-up painting is done using spray paint; the empty aerosol cans are disposed as municipal waste. Cleaning rags and Speedy Dry are disposed as municipal waste.

Figure 4: 314 FMS AGE Accumulation Site

Shop: Refurbishing Bldg: 245
Contact: MSgt Moore AUTOVON: 731-6172

Shop personnel do interior and exterior touch-up painting and repair interior fabric for the C-130 aircraft. Waste methyl ethyl ketone (MEK) (50 gallons/month) is drummed, transferred to the 314 FMS accumulation point, and disposed through DRMO as hazardous waste. The drum is locked and a log containing date, quantity, and type of waste is maintained at the drum.

B. 314 Civil Engineering Squadron (314 CES)

Shop: Power Production Bldg: 534
Contact: Mr Bryant AUTOVON: 731-6061

Shop personnel operate and maintain gasoline and diesel powered generators used throughout the base. Waste motor oil (50 gallons/month) is drummed for disposal as waste POL through DRMO. The shop has a 500-gallon bowser that is going to be used in the future for waste oil storage. Spent antifreeze (10 gallons/month) is flushed with water down the drain to the sanitary sewer. Fuel drained from the generators is either put back into the generator or another piece of equipment. Cleaning rags are disposed as municipal waste. Lead-acid batteries (3/month) are emptied onto a concrete pad; the electrolyte is neutralized with baking soda before being discharged to the sanitary sewer system. The empty battery casings are disposed through DRMO.

Shop: Entomology Bldg: 241
Contact: TSgt McKee AUTOVON: 731-6581

Shop personnel perform pest and weed control on Little Rock AFB. Residual chemicals from triple-rinsing procedures are discharged down the drain to the sanitary sewer. Empty containers are rendered unusable and disposed as municipal waste.

Shop: Exterior Electric Bldg: 540
Contact: SSgt Miller AUTOVON: 731-7704

Shop personnel are responsible for maintaining all transformers on base and ensuring that all transformer oil is sampled and analyzed for polychlorinated biphenyl (PCB). At the time of the survey, the base had identified most of the PCB contaminated transformers. Two transformers have been taken out of service. The base plans to leave all transformers with a PCB level of 500 ppm or less in service.

C. 314 Transportation Squadron (314 TRANS)

Shop: Vehicle Maintenance Bldg: 550
Contact: MSgt Voisin AUTOVON: 731-6996

Shop personnel perform oil changes, lubrication, and routine maintenance on all military vehicles assigned to Little Rock AFB. Waste oil and fluid (75 gallons/month) are accumulated in 55-gallon drums. A log containing date, quantity, and type of waste is maintained at the drum.

When full, the drums are taken to the 314 TRANS accumulation site for storage until disposal through DRMO as waste POL. Fuel drained from fuel tanks is collected in buckets and reused in vehicles upon repair. Currently, the shop does not have any degreasing tanks in use. When the degreasing tanks are in operation, Citrikleen is used; the waste is drummed for disposal through DRMO. Spent antifreeze (10 gallons/month) is discharged to the sanitary sewer system. Used cleaning rags and Speedy Dry are put in plastic bags for disposal as municipal waste. Omega soap (55 gallons/month) is used for cleaning floors and steam cleaning equipment. The shop floor drains are cleaned every six months; the sludge (mainly dirt) is disposed as municipal waste. Batteries (12/month) are exchanged on a one-for-one basis through Co-Pars or Interstate Battery Company.

Shop: Refueling Maintenance — Bldg: 552
Contact: TSgt Williams — AUTOVON: 731-3369

Refueling maintenance personnel maintain and repair aircraft refueling vehicles. Waste JP-4 (250 gallons/month) is collected in a bucket and transferred to a bowser. The fuel is analyzed by POL before being recycled into the base fuel supply. Previously, fuel was drained into floor drains leading to an underground storage tank (UST). The tank was determined to be leaking and is no longer in service. Waste oil (25 gallons/month) is collected in drip pans and transferred to a 55-gallon drum. When full, the drum is taken to the 314 TRANS accumulation point for storage. The waste is disposed as POL through DRMO. Cleaning rags and Speedy Dry are disposed as municipal waste.

Shop: Allied Trades — Bldg: 550
Contact: Mr Morris — AUTOVON: 731-3769

Allied Trades personnel repair and paint vehicle bodies. Enamel thinner and lacquer thinner (5 gallons/month) are accumulated in a 55-gallon drum. When full, the drum is taken to the 314 TRANS accumulation point for storage. The waste is disposed as hazardous waste through DRMO. A log containing date, quantity, and type of waste is maintained at the drum. The shop has a dry paint booth; the filters (21/month) are disposed as municipal waste. Empty aerosol cans and used cleaning rags are disposed as municipal waste.

Shop: Special Purpose Maintenance — Bldg: 549
Contact: Mr Beasley — AUTOVON: 731-6780

Shop personnel perform routine maintenance on heavy equipment and vehicles (tow trucks, dump trucks, etc.). Waste oil and fluid (150 gallons/month) are accumulated in 55-gallon drums. When full, the drums are taken to the 314 TRANS accumulation point for storage, then disposed as waste POL through DRMO. Spent antifreeze (10 gallons/month) is discharged directly to the sanitary sewer system. The shop has one 40-gallon Citrikleen degreasing tank that is changed out every two months; the waste is drummed for disposal through DRMO. Used cleaning rags and Speedy Dry are put in plastic bags for disposal as municipal waste.

Shop: Fire Truck Maintenance Bldg: 110
Contact: Mr Inzer AUTOVON: 731-6508

Shop personnel perform maintenance on the Little Rock AFB fire fighting vehicle fleet. Waste oil (25 gallons/month), transmission fluid (5 gallons/month), and brake fluid (1/2 gallon/month) are accumulated in a 55-gallon drum. When full, the drum is taken to the 314 TRANS accumulation point for storage. The waste is disposed as waste POL through DRMO. Spent antifreeze (4 gallon/month) is discharged to the sanitary sewer system. Waste diesel fuel (5 gallons/month) is collected in a 5-gallon can, taken to refueling maintenance, transferred to bowser, and disposed as waste POL through DRMO. Citrikleen HD (5 gallons/month) is used to clean the floor. Cleaning rags are disposed as municipal waste.

D. 314 Operational Maintenance Squadron (314 OMS)

Shop: Phase Inspection Bldg: 255
Contact: TSgt Morris AUTOVON: 731-3527

Shop personnel perform periodic maintenance and inspection on C-130 aircraft wings, struts, wheel wells, and cargo bay. Citrikleen (55 gallons/year) is used for cleaning shop floors. The shop floor drains are connected to the sanitary sewer system. Cleaning rags are disposed as municipal waste.

Shop: Support Equipment Bldg: 224
Contact: MSgt Janaiko AUTOVON: 731-6302

Shop personnel maintain C-130 aircraft dual rail conveyer systems and cargo pallet conveyer systems. All painting except for minor touch-up painting is done by 314 FMS Corrosion Control. Touch-up painting is done using spray paint; the empty aerosol cans are disposed as municipal waste.

Shop: Washrack Bldg: 228
Contact: MSgt Bray AUTOVON: 731-6836

Shop personnel wash C-130 aircraft. Approximately two aircraft/day are washed using B&B aircraft soap (8000 gallon/year), Penair M-5572 (5280 gallons/year), and ED-10 exhaust track cleaner (1800 gallons/year). The shop floor drains lead to an oil/water separator connected to the sanitary sewer.

E. 314 Services Squadron (314 SERVICES)

Shop: Auto Hobby Bldg: 656
Contact: Mr Roberts AUTOVON: 731-6083

The Auto Hobby Shop contains equipment for maintaining and repairing privately owned vehicles. Waste oil and fluid (400 gallons/month) are accumulated in 55-gallon drums which are emptied daily into a bowser. The oil and fluid are disposed through DRMO as waste POL. The shop has two Safety Kleen degreasing tanks (5-gallon and 30-gallon capacity) that are changed out five times a year and seven times a year, respectively, by the contractor. The shop has a dry paint booth; the filters are changed out monthly and disposed as municipal waste. Waste paint and thinner are accumulated in a 5-gallon can and taken to 314 FMS Corrosion Control for disposal with their waste paint and thinner. Batteries are disposed by the patron. Spent

antifreeze is discharged to the sanitary sewer system. Cleaning rags and Speedy Dry are disposed as municipal waste.

F. 2 Mobile Aerial Port Squadron (2 MAPS)

Shop:	Vehicle Maintenance	Bldg:	261
Contact:	MSgt Radford	AUTOVON:	731-7115

2 MAPS is responsible for loading and unloading US Army cargo pallets for deployment. Shop personnel operate and maintain 65 vehicles and aircraft loaders assigned to 2 MAPS. Fuel drained from fuel tanks is stored in a bowser and reused in another vehicle. Waste oil and fluid (720 gallons/year) are accumulated in a bowser (see Figure 5) for disposal as waste POL through DRMO.

Small vehicles are painted outside the building on a concrete pad using polyurethane and enamel paint and thinner. Waste paint and thinner (100 gallons/month) are drummed for disposal as hazardous waste through DRMO. Large vehicles are painted downtown by a contractor.

Aircraft soap (600 gallons/year) is used on the washrack for cleaning equipment. The washrack and shop floor drains are connected to an oil/water separator. The shop has a steam cleaner that is used rather than soap when it is operational. Batteries (12/month) are exchanged on a one-for-one basis through Co-Pars. Speedy Dry and cleaning rags are disposed as municipal waste. The shop has one 10-gallon Citrikleen tank that is changed out every six months. The waste is discharged to the sanitary sewer system.

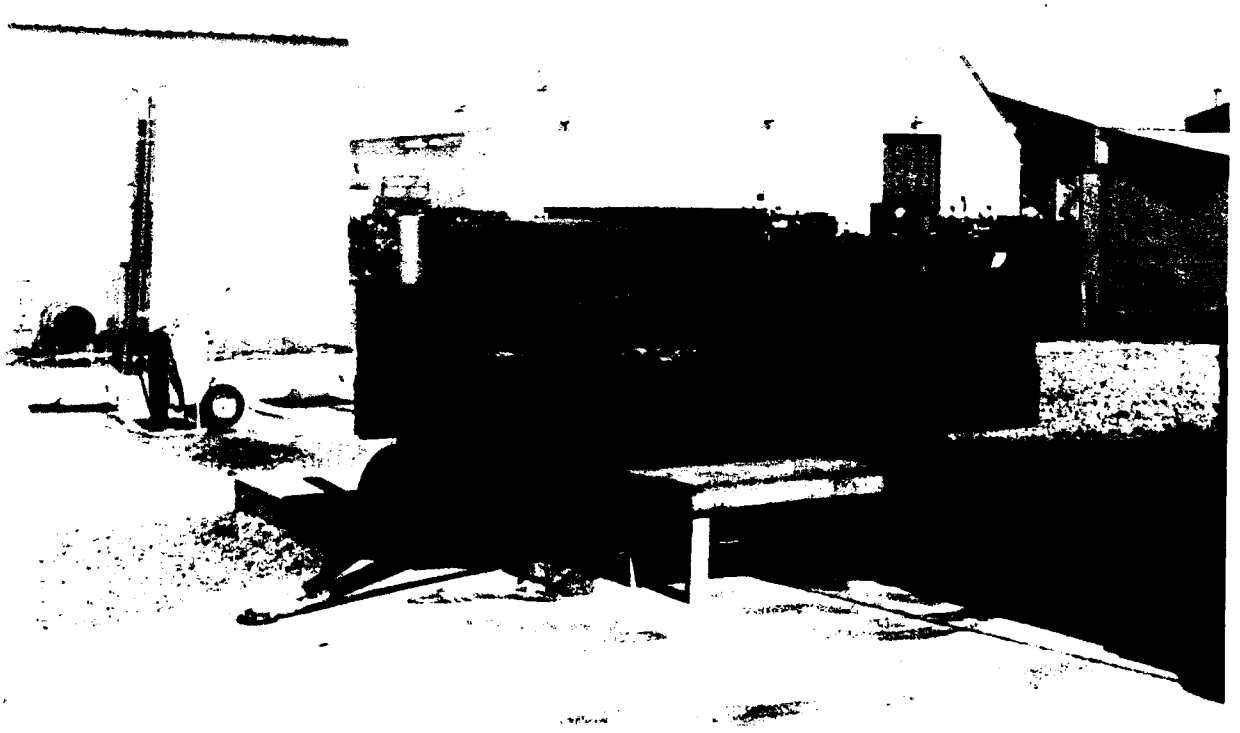

Figure 5: 2 MAPS Waste Oil Bower

G. USAF Hospital Little Rock (Hosp)

Shop: Dental X-Ray Bldg: 1090
Contact: TSgt Philbrook AUTOVON: 731-7323

Shop personnel develop x-rays produced at the Dental Clinic. Fixer (2 gallons/month) is taken to Medical X-Ray for processing through an electrolytic silver recovery unit and a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer system. Developer (2 gallons/month) is discharged down the drain to the sanitary sewer system.

Shop: Medical Laboratory Bldg: 1090
Contact: SSgt Gifford AUTOVON: 731-7298

Shop personnel perform clinical analysis for the hospital. Methanol is used in process for cleaning equipment. All chemical reagents are flushed with water down the drain to the sanitary sewer system. Xylene is not used.

Shop: Medical X-Ray Bldg: 1090
Contact: TSgt Bates AUTOVON: 731-7467

Shop personnel develop x-rays produced at the hospital. Fixer (60 gallons/month) is processed through an electrolytic silver recovery unit and a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer system. Developer (60 gallons/month) is discharged down the drain to the sanitary sewer.

H. 189 Tactical Airlift Group (189 ANG)

Shop: Pneudraulic Bldg: 207
Contact: MSgt Claybrook AUTOVON: 731-6085

Shop personnel service, repair, and maintain hydraulic and pneumatic components in the C-130 aircraft. Waste hydraulic fluid (15 gallons/month) is collected in a bucket and transferred to a 55-gallon drum located at the ANG accumulation point (see Figure 6). The waste is disposed as waste POL through DRMO. The shop has a 30 gallon PD-680 tank which is changed out three times per year. The waste (90 gallons/year) is drummed for disposal through DRMO as hazardous waste. Cleaning rags are sent to a local contractor for cleaning and reissue.

Shop: Phase Inspection Bldg: 207
Contact: MSgt Murphee AUTOVON: 731-3647

Shop personnel perform periodic maintenance and inspection on C-130 aircraft wings, struts, wheel wells, and cargo bay. Waste hydraulic fluid (10 gallons/month) is collected in a bucket, transferred to a 55-gallon drum located at the ANG accumulation point, disposed as waste POL through DRMO. Citrikleen (55 gallons/year) is used at the washrack for cleaning aircraft. The washrack drains are connected to an oil/water separator. Cleaning rags are sent to a local contractor for cleaning and reissue.

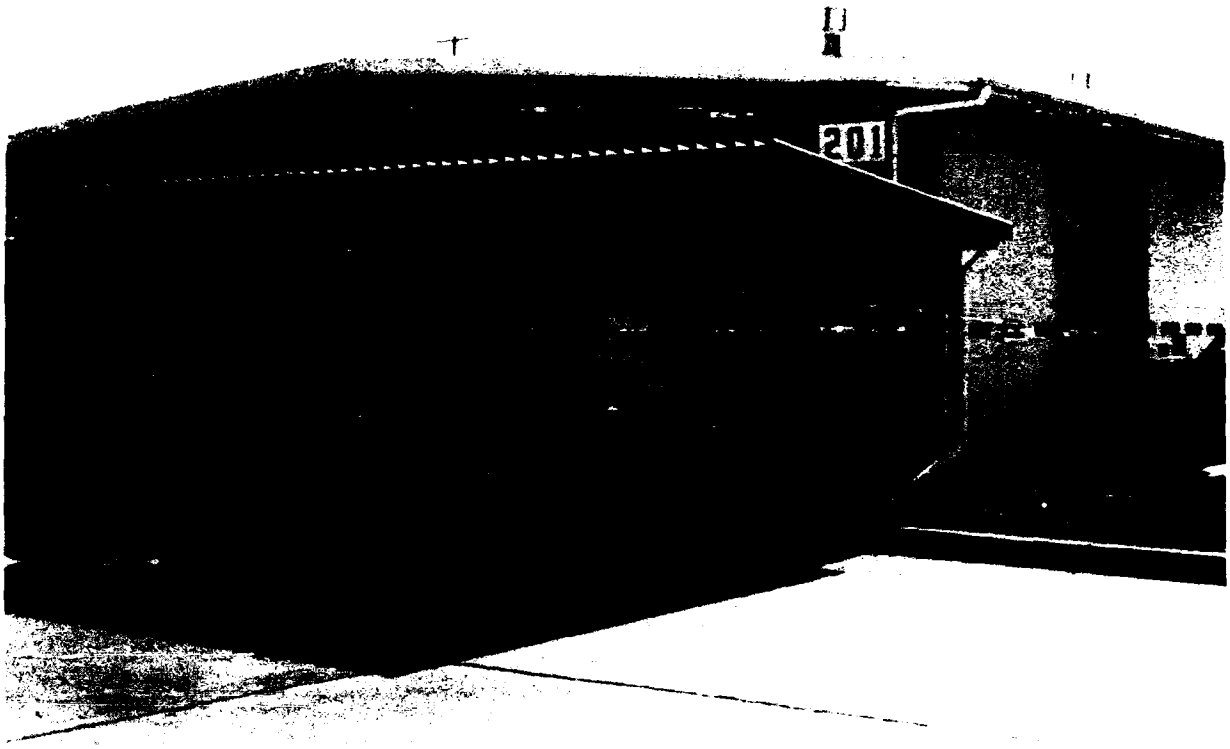

Figure 6: 189 ANG Accumulation Site

Shop:	Jet Engine	Bldg:	207
Contact:	SMSgt Measles	AUTOVON:	731-3597

Shop personnel perform routine maintenance on T56-7 and T56-15 engines. JP-4 (5 gallons/month) drained from the engines is collected in buckets which are emptied into a bowser. The fuel is analyzed by POL and recycled into the base fuel supply. Engine oil (20 gallons/month) and hydraulic fluid (10 gallons/month) drained from the engines are collected in buckets which are emptied into 55-gallon drums at the ANG accumulation point.

The waste is disposed through DRMO as waste POL. The shop has a bearing room; however, it is not used since most of the bearings used by the shop are available as bench stock items. Omega soap is used for cleaning shop floors. The shop floor drains are connected to an oil/water separator. Cleaning rags are sent to a local contractor for cleaning and reissue.

Shop:	AGE	Bldg:	207
Contact:	SMSgt Boody	AUTOVON:	731-3240

Shop personnel repair, maintain, and dispatch flight line support equipment for C-130 aircraft. Waste synthetic oil, engine oil, and hydraulic fluid (10 gallons/month) are collected in drip pans or buckets and transferred to a 55-gallon drum located at the ANG accumulation point. The waste is disposed as waste POL through DRMO. The shop has a 10-gallon PD-680 tank that is changed out as needed (about every six months). The waste is drained into a bucket and transferred to a 55-gallon drum located at the accumulation point prior to disposal through DRMO as hazardous waste. Aircraft soap (3 gallons/ month) and some Citrikleen are used on the washrack for washing AGE. The washrack drains are connected to an oil/water separator. Touch-up painting is done using spray paint; the empty aerosol cans are disposed as municipal waste. Cleaning rags are sent to a local contractor for cleaning and reissue.

Shop:	Corrosion Control	Bldg:	207
Contact:	TSgt Claxon	AUTOVON:	731-3794

Shop personnel perform corrosion control treatment and painting on C-130 aircraft, associated aircraft parts and support equipment. Touch-up painting of the flight deck, seats, and interior components is done inside the hangar using spray paint. Empty aerosol cans are disposed as municipal waste.

Exterior panel touch-up painting is done using enamel paint and lacquer thinner. The waste (5 gallons/month) is drummed, stored at the shop's accumulation site, and disposed as hazardous waste through DRMO. Occasionally small parts are stripped prior to being sent to NDI. The stripping is done at the washrack. The stripping waste is rinsed with copious amounts of water to an oil/water separator connected to the sanitary sewer (see Figure 7). Cleaning rags are disposed as municipal waste.

The following ANG shops were visited; however, all of the waste generating activities are conducted at other shops throughout the base:

Shop:	Equipment Shop	Bldg:	100
Contact:	Lt Duncan	AUTOVON:	731-6588
Shop:	Entomology	Bldg:	100
Contact:	Lt Duncan	AUTOVON:	731-6588
Shop:	Power Production	Bldg:	100
Contact:	Lt Duncan	AUTOVON:	731-6588
Shop:	Exterior Electric	Bldg:	100
Contact:	Lt Duncan	AUTOVON:	731-6588

V. SUMMARY OF WASTE DISPOSAL PRACTICES AT LITTLE ROCK AFB

The waste disposal practices for different waste categories are summarized in this section. A summary of disposal practices for each waste category is contained in Appendix D.

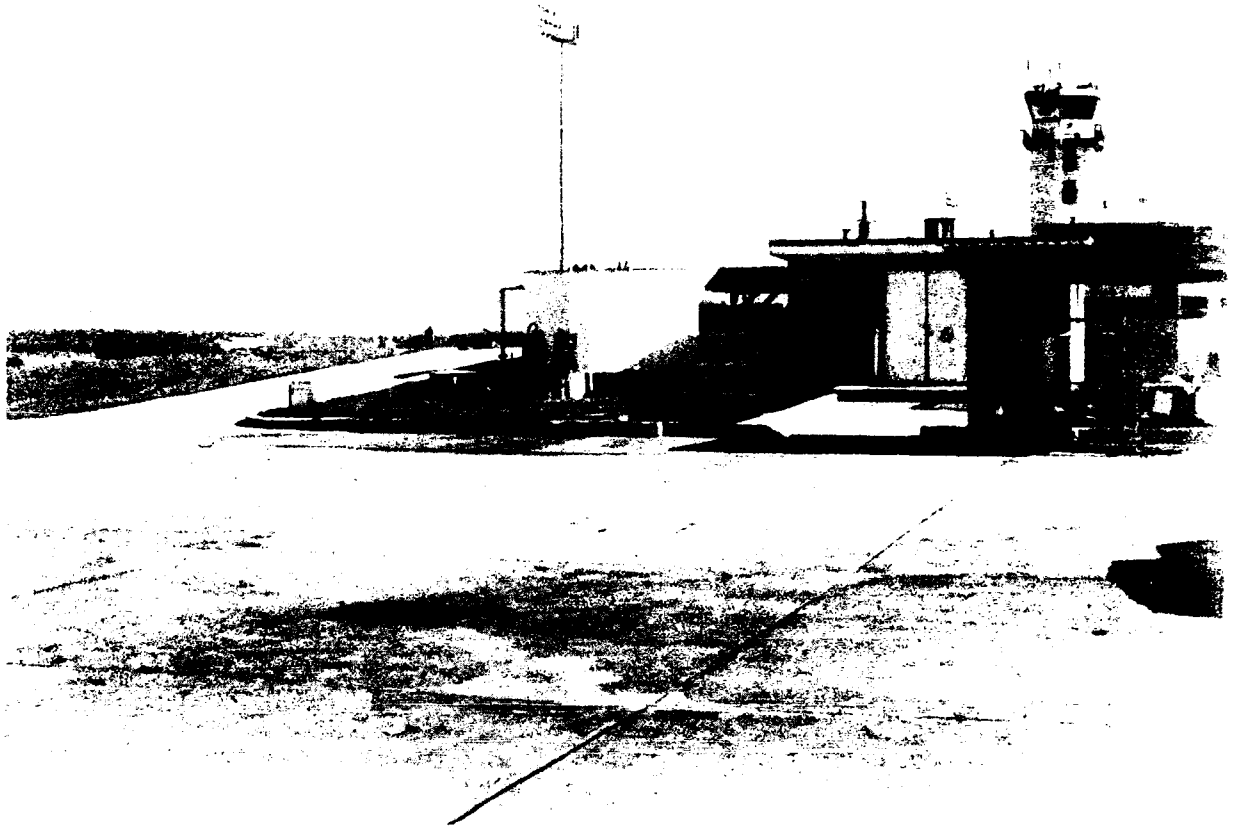

Figure 7: 189 ANG Oil/Water Separator

A. Waste oil and fluid are placed in bowsers or 55-gallon drums and disposed as waste POL through DRMO. In some cases, waste oil and fluid are discharged to oil/water separators that are periodically cleaned out by a contractor. Currently, waste oils and fluids are sold to local contractors for 3 to 8 cents/gallon. The payment received is based on demand at the time of disposal.

B. Waste paint and thinner are generally placed in 55-gallon drums and stored at the appropriate accumulation site. The wastes are sampled by BES personnel when necessary before being transported to the DRMO storage facility. Once the waste is characterized, it is transported to the DRMO storage facility for storage until the contractor picks it up.

C. Waste JP-4 and MoGas are generally collected in drip pans or buckets and transferred to fuel bowsers. When full, the bowsers are taken to the POL storage area. The fuel is analyzed by POL personnel and usually blended back into the main base fuel supply. Fuel contaminated with excess water and dirt is burned at the fire training pit for training purposes.

D. Spent lead-acid batteries are generally exchanged on a one-for-one basis through Co-Pars or Interstate Battery Company. 314 CES Power Production neutralizes lead-acid battery electrolyte with sodium bicarbonate on a concrete pad before washing the solution to the sanitary sewer system.

E. Waste PD-680 is currently drummed and stored at the various accumulation points throughout the base. The base plans to distill the PD-680 for reuse.

F. Some waste solvents (e.g., some Citrikleen) are drummed and disposed through DRMO as waste solvents. Other waste solvents (e.g., Citrikleen and Citrikleen HD) are used on washracks; the waste is discharged down the drain to an oil/water separator. Citrikleen and Citrikleen HD used in degreasing tanks are discharged down the drain to the sanitary sewer.

G. Waste fixers are processed through a Peterson Silver Recovery Cell and/or an electrolytic silver recovery unit before being discharged down the drain to the sanitary sewer. All other photo chemicals are discharged down the drain to the sanitary sewer.

H. Waste dye-penetrant, emulsifier, developer and magnetic particle solution generated at NDI are drummed and disposed as hazardous waste through DRMO.

I. All chemicals used in the hospital laboratories are used in process and discharged to the sanitary sewer system.

J. Cleaning rags from most shops are disposed as municipal waste. The 189 ANG shops have a contract with a local linen service for cleaning and reissuing shop rags.

K. Paint filters from the dry paint booth at 314 TRANS Allied Trades and the 314 Services Auto Hobby Shop are disposed as municipal waste.

L. Speedy Dry, used to clean up small spills, is disposed as municipal waste.

M. Water from the 314 FMS Corrosion Control waterfall paint booth is filtered and discharged down the drain to the sanitary sewer. The paint booth sludge is disposed as hazardous waste.

N. Crushed walnut shells used as paint stripper at 314 FMS Corrosion Control are disposed as municipal waste.

O. Alodine used for pretreating aluminum parts before painting at 314 FMS Corrosion Control is drummed and disposed through DRMO as hazardous waste.

P. Caustic ethanolamine paint stripper, used at 314 FMS Wheel and Tire shop, is drummed and disposed through DRMO as hazardous waste.

Q. Empty aerosol cans are disposed as municipal waste.

R. Spent antifreeze is washed down the drain to the sanitary sewer.

S. Rinsewater generated from triple-rinsing pesticide containers, herbicide containers and cleaning equipment at 314 CES Entomology is discharged down the drain to the sanitary sewer system.

T. Soaps and cleaning compounds are discharged down the drain to oil/water separators connected to either the sanitary sewer system or the storm drainage system.

VI. CONCLUSIONS

A. DEEV is responsible for training shop hazardous waste monitors. The training course is given every six months. The Fire Department, Judge Advocate General, Base Commander, and DRMO provide inputs during the training course. Typically, the NCOIC of the shop is designated as the accumulation site or satellite accumulation site monitor. The alternate site monitors are required to hold the rank of E-5 or above. Most shop personnel are very knowledgeable in the proper procedures for handling hazardous waste; this indicates that the training program is effective.

B. The base has a waste analysis plan; however, it does not identify specific waste streams, sampling frequency, sample collection method, and analytical parameters.

C. Little Rock AFB is in the process of obtaining a RCRA Part B permit for the base and the DRMO. All hazardous waste currently generated by the base will be covered by the RCRA Part B permit.

D. 314 CES Water Shop personnel are responsible for inspecting waste storage containers at the accumulation sites before they are transported to the DRMO storage facility.

E. 314 TRANS personnel maintain logs containing the date, quantity and type of waste that is put into all waste storage containers. A log is kept with each waste container. This practice provides documented rationale for waste disposal without chemical analysis. Several other shops keep their waste storage containers locked.

F. 314 CES/DEEV is working in conjunction with 314 FMS to set up a solvent distillation unit (Finish Brand). The distillation unit will be used for recycling PD-680. Shops are storing waste PD-680 (sometimes for periods greater than 90 days) until the distillation unit is operational.

G. Hospital personnel dispose numerous noninfectious items (paper, Styrofoam cups, plastic reagent containers) in the "red bags" which are intended for infectious waste only. The hospital is currently in the process of designing a new incinerator which will have a larger capacity.

H. Funds received from the sale of used POL are put into the Morale, Welfare, and Recreation account.

VII. RECOMMENDATIONS

A. The 314 FMS AGE waste oil storage area should be moved to an area that remains dry rather than the washrack. If a drum leaks at the current location, the spillage will probably be washed down the drain rather than contained.

B. 314 CES Power Production should either construct a sink or tank for neutralizing lead-acid battery electrolyte or establish a contract for disposing the batteries wet. The neutralized electrolyte should be analyzed for pH and total metals. If the waste is determined to be nonhazardous, it can be discharged to the sanitary sewer system.

C. 314 CES Entomology should contain the water used for triple-rinsing empty pesticide and herbicide containers and use if for mixing the chemicals rather than discharging it to the sanitary sewer system.

D. All shops that use Speedy Dry should consider using an alternate absorbent material such as one that is siliceous-based. This type absorbent material reduces clean up time, requires less absorbent, and reduces the quantity of waste generated.

E. All shops on base should evaluate the possibility of establishing a contract with a local linen contractor for cleaning and reissuing shop rags.

F. The spent crushed walnut shell paint stripping media from 314 FMS Corrosion Control should be analyzed for EP Toxicity metals before disposal. If the material is nonhazardous, the shop can continue to dispose of it as municipal waste.

G. The used paint filters from 314 TRANS Allied Trades and the Auto Hobby Shop should be sampled and analyzed to determine whether or not they are hazardous. If they prove to be nonhazardous, the filters can continue to be disposed as municipal waste.

H. Spent chemicals from the dye penetrant and magnetic particle inspection processes at 314 FMS NDI should be sampled and analyzed to determine which ones are actually hazardous. If any of the wastes are nonhazardous, they can be disposed of down the drain or as POL, whichever is applicable.

I. 2 MAPS should contact 314 TRANS Allied Trades to discuss the possibility of utilizing their paint booth. Painting operations should not be performed outdoors.

J. The water from the waterfall paint booth at 314 FMS Corrosion Control should be sampled (after the water passes through the filtering system) and analyzed for toxic metals to provide documentation of whether the waste is hazardous or nonhazardous.

K. The spent Citrikleen from degreasing tanks located at 314 FMS AGE, 314 FMS Refurbishing, 2 MAPS, and 314 TRANS Special Purpose Maintenance should be sampled and analyzed for toxic metals to determine if it is hazardous. The sludge layer should be sampled separately from the liquid layer. This sampling procedure will provide documented rationale for disposal procedures.

L. Aircraft parts stripping should not be performed at the ANG washrack. The oil/water separator will not reduce the toxicity of the stripper before it enters the sanitary sewer. The stripping operations should be performed in a tank.

M. Although not required by law, it would be advantageous to Little Rock AFB to upgrade the accumulation sites with, at a minimum, covers, locking fences, and impermeable, diked surfaces. These measures could facilitate spill containment and minimize adverse environmental consequences (e.g., soil and groundwater contamination from leaks and spills).

N. Little Rock AFB should develop a more comprehensive waste analysis plan. This plan should include a complete listing of all known wastestreams with a brief description of the process or operation generating the waste; the results of a baseline chemical analysis (to fully characterize the waste); the sampling technique; the analysis parameters; and the required test method (see Table 2 for example). This type of sampling program will allow the base to establish documented rationale for classifying each wastestream as either hazardous or nonhazardous.

O. Waste storage containers should be locked to prevent cross- contamination of wastes. Also, accumulation site managers should document the waste storage container contents in a log. This log should contain (1) a unique sequence number to identify which wastestream generated the waste (each wastestream in a shop should have a unique number); (2) date, type, and amount of waste put into the drum (see Table 2 for example); (3) start and stop dates of filling each drum; and (4) name and signature of person putting the waste in the container. Also, a uniform system of documentation should be used by all site managers on base. This type of log can provide documented rationale for substituting user's knowledge for analytical results for waste disposal.

Table 2: Example Hazardous Waste Disposal Log

PAINT SHOP HAZARDOUS WASTE DISPOSAL
LOG FOR DRUM NUMBER: 1

Date	Type of Waste	Amount of Waste	Name & Signature
10 Jun 89	Enamel Paint	1 qt	
10 Jun 89	MEK	1 gal	
15 Jun 89	MEK	1 gal	
20 Jun 89	Polyurethane Paint	1 qt	
25 Jun 89	Polyurethane Thinner	1 gal	
30 Jun 89	MEK	10 gal	
5 Jul 89	Enamel Paint	1 qt	
6 Jul 89	MEK	2 gal	
6 Jul 89	Enamel Paint	1 qt	
7 Jul 89	MEK	2 gal	
8 Jul 89	MEK	2 gal	
9 Jul 89	MEK	2 gal	
11 Jul 89	MEK	2 gal	
13 Jul 89	Enamel Paint	1 qt	
13 Jul 89	MEK	2 gal	
14 Jul 89	MEK	2 gal	
16 Jul 89	Enamel Paint	1 qt	
16 Jul 89	MEK	5 gal	
18 Jul 89	Polyurethane Paint	2 qts	
18 Jul 89	Polyurethane Thinner	3 gal	
20 Jul 89	MEK	4 gal	
21 Jul 89	MEK	1 gal	
28 Jul 89	Enamel Paint	1 gal	
28 Jul 89	MEK	7 gal	
	TOTAL:	50 gal	

Amounts:

MEK	43.00 gal	86.00%
Polyurethane Thinner	4.00 gal	8.00%
Enamel Paint	2.25 gal	4.50%
Polyurethane Paint	0.75 gal	1.50%

References

1. "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA-600/2-80-018, Jan 1980.

2. United States Environmental Protection Agency, "Identification and Listing of Hazardous Waste," 40 CFR 261.

APPENDIX A

Request Letter

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS MILITARY AIRLIFT COMMAND
SCOTT AIR FORCE BASE, ILLINOIS 62225-5001

REPLY TO ATTN OF: LGMW

12 JAN 1990

SUBJECT: Request for Hazardous Waste Technical Assistance Survey

HQ MAC/SGPB 12 JAN 90
TO: USAF OEHL/ECQ
IN TURN

1. We are extremely interested in having hazardous waste technical surveys accomplished at our MAC bases. Request your assistance in adding the following bases to your survey schedule:

Little Rock AFB AR
Kirtland AFB NM
Andrews AFB MD
Scott AFB IL
McChord AFB WA

2. We appreciate your assistance in this matter. If at all possible, accomplish this survey at Little Rock AFB at your earliest possible convenience.

3. For additional information, feel free to contact our HQ MAC/LGMWF POC SMSgt Annis, AUTOVON 576-3254.

[illegible] W. SMITH, Jr., Lt Col, USAF
Asst Ch, Weapon Systems Division
Dir of Maintenance Engineering

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APPENDIX B

Chemical Disposal Survey Form

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PLEASE RETURN THIS FORM TO LT BOGERT AT USAF HOSP/SGPB BY 9 FEB 90

SHOP: BLDG:

CONTACT: AUTOVON:

Please fill CAPT out this form as accurately and completely as possible. If you have any questions on filling it out, please call Capt McMullen or Lt Hedgecock at X7378.

Examples:

	Tank Capacity	Change Out Frequency	Method of Disposal
PD-680 used in tank	60 gal	4/year	55-gal drum

Comments: 1/2 gal of MEK per month is used as a wipe on/wipe off process for parts cleaning. None is disposed of.

OILS & FLUIDS

	Amt of Waste	Disposal Method
Brake Fluid	6 gal	placed in
Transmission Fluid	10 gal	same 600-gal
Hydraulic Fluid	3 gal	bowser
Motor Oil	50 gal	500-gal UGT
Synthetic Oil	8 gal	55-gal drum

QUESTIONS: If question does not apply to this shop put "N/A" beside it.

1. Does this shop have any underground storage tanks?_____

   If yes: How many?_____

   Capacity?_____

   What is stored in the tank?_____

_____

   How often is it cleaned out?_____

   Has it ever been leak-tested?_____

2. Do the floor drains of the shop lead to an oil/water separator?_____

   If yes: How often is it cleaned out?_____

3. Does the shop have any Safety Kleen units?_____

   If yes: How many?_____

   Tank capacity?_____

   How often are they serviced?_____

4. What does the shop do with dirty rags?_____

   _____

5. What does the shop do with used "Speedy Dry"?_____

   _____

6. Describe shop activities and responsibilities below:

PAINT WASTE AND THINNERS

PAINTS	Amount of Waste generated/month	Disposal Method
Latex		
Polyurathane		
Enamel		
Other		

Comments

THINNERS (list below)

Comments

STRIPPERS

Name of Stripper	National Stock #	Amount of Waste per Month	OR Tank Size	Change Out Freq

Comments

ACIDS

Name of Acid	Manufacturer	Amount of Waste generated/month	Method of Disposal

Comments

BATTERIES

Type of Battery	#/Month	Neutralized in Shop or Turned in Wet

Comments:

SOAPS/CLEANERS

Name of Soap	Dilution Ratio	National Stock#	Amt Used / month	Disposal Method

Comments

OILS AND FLUIDS

	Amt. of Waste Generated/month	Disposal Method
Brake Fluid		
Transmission Fluid		
Hydraulic Fluid		
Motor Oil		
Synthetic Oil		
Other		
Comments		

SOLVENTS/DEGREASANTS

Name of Chemical	Amt. of Waste generated/mo.	OR Tank Size	Change Out Freq	Disposal Method
Carbon Remover				
PD-680 used in tank				
Pd-680 used on washrack				
Other:				
Comments				

PHOTO CHEMICALS

Name of Chemical	Manufacturer	Amt/mo	OR Tank Size	Change Out freq	Disposal Method

---

Is the fixer processed through a silver recovery unit before disposal?_____

NDI Chemicals

Name of Chemical	Manufacturer	National Stock #	Tank Size	Change Out Freq	Disposal Method
Emulsifier					
Dye Penetrant					
Developer					
Comments					

FUELS

Name of Fuel	Amount/Month	Disposal Method

ANTIFREEZE

	Amount/Month	Disposal Method

OTHER CHEMICALS (Please list any chemicals that contain phenols)

Name of Chemical	Manufacturer	National Stock #	Tank Size	Change Out Freq	Disposal Method

Signature of person filling out this form_____

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APPENDIX C

Accumulation Site Survey Form

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HAZARDOUS WASTE ACCUMULATION SITE INSPECTION FORM

LOCATION: _____ DATE: _____

ACCUMULATION SITE MANAGER: _____ PHONE: _____

ITEM	CONDITIONS	STATUS		COMMENTS
		YES	NO	
STORAGE SITE	Secure			
	Gates Locked			
	Warning Signs			
	No smoking			
	Impermeable Floor			
	Diked/Burmed			
	Valve in Burm to drain water			
SPILL EQUIPMENT	Empty Overpack Container			
	Materials and Supplies			
FIRE PROTECTION	Extinguisher			
STORAGE CONTAINERS	Funnels in Containers			
	Containers Closed			
	Deteriorating			
	Leaking			
	Spills			

Overall Rating of Accumultion Site: _____

LISTING OF WASTES AT ACCUMULTION SITE

EPA WASTE NUMBER	NUMBER OF CONTAINERS	TYPE OF WASTE	ACCUMULATION START DATE	COMMENTS

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APPENDIX D

Summary of Waste Disposal Practices for Each Waste Category

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SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: FUEL

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS Engine Maint	JP-4	660	REC
314 FMS Test Cell	JP-4	NQ	REC
314 TRANS Vehicle Maint	Fuel	NQ	REC
314 TRANS Fire Truck Maint	Fuel	60	POL
314 FMS AGE	Fuel	10	POL
314 FMS Fuel Cell Repair	JP-4	7200	REC
2 MAPS Vehicle Maint	Fuel	NQ	REC
314 TRANS Refueling Maint	JP-4	3000	REC
189 ANG Jet Engine	JP-4	60	REC
314 CES Power Production	Fuel	NQ	REC
	TOTAL:	10990	

WASTE: OIL & FLUID

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS Engine Maint	Hydraulic Fluid	1200	POL
189 ANG Phase Inspection	Hydraulic Fluid	120	POL
189 ANG Jet Engine	Hydraulic Fluid	120	POL
189 ANG Jet Engine	Engine Oil	240	POL
314 FMS Engine Maint	Engine Oil	3000	POL
314 TRANS Special Purpose Main	Oil & Fluid	1800	POL
314 FMS AGE	Oil & Fluid	1200	POL
314 TRANS Fire Truck Maint	Fluid	66	POL
189 ANG Pneudraulics	Hydraulic Fluid	180	POL
314 TRANS Fire Truck Maint	Oil	300	POL
314 FMS Pneudraulics	Hydraulic Fluid	480	POL
2 MAPS Vehicle Maint	Oil & Fluid	720	POL
314 SERVICES Auto Hobby	Oil & Fluid	4800	POL
314 TRANS Refueling Maint	Motor Oil	300	POL
314 FMS Test Cell	Hydraulic Fluid	1800	POL
314 FMS Test Cell	Engine Oil	240	POL
314 TRANS Vehicle Maint	Oil & Fluid	900	POL
314 CES Power Production	Motor Oil	600	POL
189 ANG AGE	Oil & Fluid	120	POL
	TOTAL:	18186	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: SOLVENTS

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 OMS Phase Inspection	Citrikleen	55	DD
314 TRANS Fire Truck Maint	Citrikleen HD	60	DD
314 FMS Refurbishing	MEK	600	HW
314 FMS Pneudraulics	PD-680	450	DRMO
314 TRANS Vehicle Maint	Citrikleen	NQ	DRMO
314 FMS Engine Maint	Citrikleen HD	250	OWS
314 SERVICES Auto Hobby	Safety Kleen	235	SBC
2 MAPS Vehicle Maint	Citrikleen	20	DD
189 ANG Pneudraulics	PD-680	90	DRMO
189 ANG AGE	Citrikleen	NQ	OWS
314 FMS AGE	Citrikleen	150	DD
314 FMS Wheel & Tire	Citrikleen	300	DD
189 ANG AGE	PD-680	20	DRMO
314 TRANS Special Purpose Main	Citrikleen	240	DRMO
314 FMS Engine Maint	PD-680	240	REC
189 ANG Phase Inspection	Citrikleen	55	OWS
314 FMS AGE	Citrikleen	NQ	OWS
	TOTAL:	2765	

WASTE: PAINT

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS Corrosion Control	Paint Sludge	NQ	HW
314 FMS Corrosion Control	Turco Iso-Floc	NQ	DD
314 FMS Wheel & Tire	Stripper	300	HW
314 FMS Corrosion Control	Paint & Thinner	660	HW
189 ANG Corrosion Control	Paint & Thinner	60	HW
314 FMS Corrosion Control	Walnut Shells	NQ	MW
314 FMS Corrosion Control	Alodine	300	HW
189 ANG Corrosion Control	Stripper	NQ	OWS
2 MAPS Vehicle Maint	Paint & Thinner	100	HW
314 FMS Corrosion Control	Water	60000	DD
314 SERVICES Auto Hobby	Paint Filters	NQ	MW
314 SERVICES Auto Hobby	Paint & Thinner	NQ	HW
	TOTAL:	61420	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: ANTIFREEZE

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 TRANS Fire Truck Maint	Antifreeze	48	DD
314 TRANS Special Purpose Main	Antifreeze	120	DD
314 TRANS Vehicle Maint	Antifreeze	120	DD
314 SERVICES Auto Hobby	Antifreeze	NQ	DD
314 CES Power Production	Antifreeze	120	DD
	TOTAL:	408	

WASTE: BATTERIES

SHOP	WASTE	QTY(NO/YR)	DISPOSAL
2 MAPS Vehicle Maint	Batteries	144	REC
314 SERVICES Auto Hobby	Batteries	NQ	PAT
314 CES Power Production	Battery Casings	36	DRMO
314 CES Power Production	Lead-Acid Batteries	36	NDD
314 TRANS Vehicle Maint	Batteries	144	REC
	TOTAL:	360	

WASTE: SOAP

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS Engine Maint	Omega Soap	NQ	OWS
314 OMS Washrack	ED-10	1800	OWS
189 ANG Jet Engine	Omega Soap	NQ	OWS
314 OMS Washrack	Penair M-5572	5280	OWS
2 MAPS Vehicle Maint	Aircraft Soap	600	OWS
314 TRANS Vehicle Maint	Omega Soap	660	OWS
314 OMS Washrack	B&B Aircraft Soap	8000	OWS
314 FMS AGE	Aircraft Soap	660	OWS
189 ANG AGE	Aircraft Soap	36	OWS
	TOTAL:	17036	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: PHOTO & NDI

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
HOSP Dental X-Ray	Developer	24	DD
314 FMS NDI	Developer	400	HW
HOSP Medical X-Ray	Fixer	720	SRDD
314 FMS NDI	Emulsifier	400	HW
HOSP Dental X-Ray	Fixer	24	SRDD
314 FMS NDI	Penetrant	400	HW
314 FMS NDI	Magnetic Particle Soln	80	POL
HOSP Medical X-Ray	Developer	720	DD
314 FMS NDI	X-Ray Fixer	240	SRDD
314 FMS NDI	X-Ray Developer	120	DD
	TOTAL:	3128	

WASTE: RAGS

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS Pneudraulics	Cleaning Rags	NQ	MW
314 TRANS Fire Truck Maint	Cleaning Rags	NQ	MW
314 TRANS Refueling Maint	Cleaning Rags	NQ	MW
314 FMS Corrosion Control	Cleaning Rags	NQ	MW
314 FMS Engine Maint	Cleaning Rags	NQ	MW
189 ANG Phase Inspection	Cleaning Rags	NQ	SBC
2 MAPS Vehicle Maint	Cleaning Rags	NQ	MW
314 CES Power Production	Cleaning Rags	NQ	MW
189 ANG Jet Engine	Cleaning Rags	NQ	SBC
189 ANG Corrosion Control	Cleaning Rags	NQ	SBC
314 FMS AGE	Cleaning Rags	NQ	MW
314 FMS Fuel Cell Repair	Cleaning Rags	NQ	MW
189 ANG Pneudraulics	Cleaning Rags	NQ	SBC
314 OMS Phase Inspection	Cleaning Rags	NQ	MW
314 TRANS Vehicle Maint	Cleaning Rags	NQ	MW
314 TRANS Special Purpose Main	Cleaning Rags	NQ	MW
314 SERVICES Auto Hobby	Cleaning Rags	NQ	MW
314 FMS Wheel & Tire	Cleaning Rags	NQ	MW
189 ANG AGE	Cleaning Rags	NQ	MW
314 FMS NDI	Cleaning Rags	NQ	MW

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: SPEEDY DRY

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 TRANS Vehicle Maint	Speedy Dry	NQ	MW
2 MAPS Vehicle Maint	Speedy Dry	NQ	MW
314 TRANS Special Purpose Main	Speedy Dry	NQ	MW
314 FMS Engine Maint	Speedy Dry	NQ	MW
314 SERVICES Auto Hobby	Speedy Dry	NQ	MW
314 FMS Wheel & Tire	Speedy Dry	NQ	MW
314 FMS AGE	Speedy Dry	NQ	MW
314 TRANS Refueling Maint	Speedy Dry	NQ	MW

WASTE: AEROSOL CANS

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 FMS AGE	Aerosol Cans	NQ	MW
314 FMS NDI	Aerosol Cans	NQ	MW
189 ANG Corrosion Control	Aerosol Cans	NQ	MW
314 OMS Support Equipment	Aerosol Cans	NQ	MW
189 ANG AGE	Aerosol Cans	NQ	MW

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: PESTICIDE

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 CES Entomology	Pesticide Containers	NQ	MW
314 CES Entomology	Triple-Rinse Water	NQ	DD

WASTE: SLUDGE (DIRT)

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
314 TRANS Vehicle Maint	Floor Drain Sludge	NQ	MW

LEGEND:
- SRDD - SILVER RECOVERY THEN DOWN DRAIN
- POL - PETROLEUM, OILS, & LUBRICANTS
- HW - DISPOSED AS HAZARDOUS WASTE
- NDD - NEUTRALIZED THEN DOWN DRAIN
- SBC - SERVICED BY CONTRACTOR
- DRMO - DISPOSED THROUGH DRMO
- OWS - OIL/WATER SEPARATOR
- PAT - DISPOSED BY PATRON
- MW - MUNICIPAL WASTE
- DD - DOWN DRAIN
- REC - RECYCLED

APPENDIX E

Summary of Wastes Drummed and Disposed through DRMO

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SUMMARY OF WASTES DRUMMED AND DISPOSED THROUGH DRMO

Type of Waste: Solvent

SHOP	BLDG	PRODUCT	QTY (GAL/YR)
314 FMS Refurbishing	245	MEK	600
314 TRANS Vehicle Maint	550	Citrikleen	NQ
314 TRANS Special Purpose Main	549	Citrikleen	240
314 FMS Pneudraulics	250	PD-680	450
189 ANG Pneudraulics	207	PD-680	90
189 ANG AGE	207	PD-680	20
		TOTAL:	1400

Type of Waste: Paint

SHOP	BLDG	PRODUCT	QTY (GAL/YR)
314 FMS Corrosion Control	350	Paint & Thinner	660
2 MAPS Vehicle Maint	251	Paint & Thinner	100
189 ANG Corrosion Control	207	Paint & Thinner	60
314 SERVICES Auto Hobby	656	Paint & Thinner	NQ
314 FMS Corrosion Control	350	Alodine	300
314 FMS Corrosion Control	350	Paint Sludge	NQ
314 FMS Wheel & Tire	250	Stripper	300
		TOTAL:	1420

Type of Waste: Photo & NDI

SHOP	BLDG	PRODUCT	QTY (GAL/YR)
314 FMS NDI	368	Penetrant	400
314 FMS NDI	368	Emulsifier	400
314 FMS NDI	368	Developer	400
		TOTAL:	1200

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APPENDIX F

Master List of Shops

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MASTER LIST OF SHOPS

SHOP	CONTACT	BUILDING	EXTENSION
314 FMS Engine Maintenance	Sgt Kamak	356	AV 731-6944
Test Cell	MSgt Nifeneger	390	AV 731-6635
NDI	TSgt Phillips	368	AV 731-6147
Corrosion Control	MSgt Dickerson	350	AV 731-6694
Wheel and Tire	MSgt Guthrie	250	AV 731-6008
Fuel System Repair	SMSgt Cleveland	280	AV 731-3953
Pneudraulics	MSgt Moore	250	AV 731-6058
AGE	Sgt Hoffman	256	AV 731-3550
314 CES			
Power Production	Mr Bryant	534	AV 731-6061
Entomology	TSgt McKee	241	AV 731-6581
Exterior Electric	SSgt Miller	540	AV 731-7704
314 TRANS			
Vehicle Maintenance	MSgt Voisin	550	AV 731-6996
Refueling Maintenance	TSgt Williams	552	AV 731-3369
Allied Trades	Mr Morris	550	AV 731-3769
Special Purpose Maintenance	Mr Beasley	549	AV 731-6780
Fire Truck Maintenance	Mr Inzer	110	AV 731-6508
314 OMS			
Phase Inspection	TSgt Morris	255	AV 731-3527
Support Equipment	MSgt Janaiko	224	AV 731-6302
Washrack	MSgt Bray	228	AV 731-6836
314 SVS			
Auto Hobby	Mr Roberts	656	AV 731-6083
2 MAPS			
Vehicle Maintenance	MSgt Radford	261	AV 731-7115
HOSP			
Dental X-Ray	TSgt Philbrook	1090	AV 731-7323
Medical Laboratory	SSgt Gifford	1090	AV 731-7298
Medical X-Ray	TSgt Bates	1090	AV 731-7467
ANG			
Pneudraulic	MSgt Claybrook	207	AV 731-6085
Phase Inspection	MSgt Murphee	207	AV 731-3647
Jet Engine	SMSgt Measles	207	AV 731-3597
AGE	SMSgt Boody	207	AV 731-3240
Corrosion Control	TSgt Claxon	207	AV 731-3794
Equipment Shop	Lt Duncan	100	AV 731-6588
Entomology	Lt Duncan	100	AV 731-6588
Power Production	Lt Duncan	100	AV 731-6588
Exterior Electric	Lt Duncan	100	AV 731-6588

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APPENDIX G

Summary of Waste Disposal Practices by Shop

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DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB

SHOP: 189 ANG AGE Building: 207

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Oil & Fluid	120	POL
Aerosol Cans	NQ	MW
Cleaning Rags	NQ	MW
Citrikleen	NQ	OWS
PD-680	20	DRMO
Aircraft Soap	36	OWS
TOTAL:	176	

SHOP: 189 ANG Corrosion Control Building: 207

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Stripper	NQ	OWS
Cleaning Rags	NQ	SBC
Paint & Thinner	60	HW
Aerosol Cans	NQ	MW
TOTAL:	60	

SHOP: 189 ANG Jet Engine Building: 207

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	SBC
Engine Oil	240	POL
Omega Soap	NQ	OWS
Hydraulic Fluid	120	POL
JP-4	60	REC
TOTAL:	420	

SHOP: 189 ANG Phase Inspection Building: 207

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Hydraulic Fluid	120	POL
Citrikleen	55	OWS
Cleaning Rags	NQ	SBC
TOTAL:	175	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 189 ANG Pneudraulics Building: 207

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Hydraulic Fluid	180	POL
Cleaning Rags	NQ	SBC
PD-680	90	DRMO
	TOTAL: 270	

SHOP: 2 MAPS Vehicle Maint Building: 261

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Oil & Fluid	720	POL
Fuel	NQ	REC
Citrikleen	20	DD
Cleaning Rags	NQ	MW
Paint & Thinner	100	HW
Speedy Dry	NQ	MW
Aircraft Soap	600	OWS
Batteries	144	REC
	TOTAL: 1584	

SHOP: 314 CES Entomology Building: 241

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Pesticide Containers	NQ	MW
Triple-Rinse Water	NQ	DD

SHOP: 314 CES Power Production Building: 534

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	MW
Antifreeze	120	DD
Battery Casings	36	DRMO
Lead-Acid Batteries	36	NDD
Fuel	NQ	REC
Motor Oil	600	POL
	TOTAL: 792	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 314 FMS AGE Building: 256

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Citrikleen	150	DD
Oil & Fluid	1200	POL
Fuel	10	POL
Citrikleen	NQ	OWS
Aircraft Soap	660	OWS
Aerosol Cans	NQ	MW
Speedy Dry	NQ	MW
Cleaning Rags	NQ	MW
TOTAL:	2020	

SHOP: 314 FMS Corrosion Control Building: 350

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Paint Sludge	NQ	HW
Turco Iso-Floc	NQ	DD
Paint & Thinner	660	HW
Walnut Shells	NQ	MW
Rags	NQ	MW
Water	60000	DD
Alodine	300	HW
TOTAL:	60960	

SHOP: 314 FMS Engine Maint Building: 356

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Engine Oil	3000	POL
Cleaning Rags	NQ	MW
PD-680	240	REC
Hydraulic Fluid	1200	POL
JP-4	660	REC
Speedy Dry	NQ	MW
Omega Soap	NQ	OWS
Citrikleen HD	250	OWS
TOTAL:	5350	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 314 FMS Fuel Cell Repair Building: 280

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
JP-4	7200	REC
Cleaning Rags	NQ	MW
TOTAL:	7200	

SHOP: 314 FMS NDI Building: 368

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Developer	400	HW
Emulsifier	400	HW
Penetrant	400	HW
Aerosol Cans	NQ	MW
Cleaning Rags	NQ	MW
Magnetic Particle Soln	80	POL
X-Ray Developer	120	DD
X-Ray Fixer	240	SRDD
TOTAL:	1640	

SHOP: 314 FMS Pneudraulics Building: 250

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
PD-680	450	DRMO
Cleaning Rags	NQ	MW
Hydraulic Fluid	480	POL
TOTAL:	930	

SHOP: 314 FMS Refurbishing Building: 245

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
MEK	600	HW
TOTAL:	600	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 314 FMS Test Cell Building: 390

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
JP-4	NQ	REC
Engine Oil	240	POL
Hydraulic Fluid	1800	POL
	TOTAL: 2040	

SHOP: 314 FMS Wheel & Tire Building: 250

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Stripper	300	HW
Cleaning Rags	NQ	MW
Speedy Dry	NQ	MW
Citrikleen	300	DD
	TOTAL: 600	

SHOP: 314 OMS Phase Inspection Building: 255

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	MW
Citrikleen	55	DD
	TOTAL: 55	

SHOP: 314 OMS Support Equipment Building: 224

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Aerosol Cans	NQ	MW

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 314 OMS Washrack Building: 228

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
ED-10	1800	OWS
B&B Aircraft Soap	8000	OWS
Penair M-5572	5280	OWS
TOTAL:	15080	

SHOP: 314 SERVICES Auto Hobby Building: 656

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	MW
Batteries	NQ	PAT
Antifreeze	NQ	DD
Speedy Dry	NQ	MW
Safety Kleen	235	SBC
Oil & Fluid	4800	POL
Paint & Thinner	NQ	HW
Paint Filters	NQ	MW
TOTAL:	5035	

SHOP: 314 TRANS Fire Truck Maint Building: 110

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Antifreeze	48	DD
Oil	300	POL
Fluid	66	POL
Cleaning Rags	NQ	MW
Citrikleen HD	60	DD
Fuel	60	POL
TOTAL:	534	

SHOP: 314 TRANS Refueling Maint Building: 552

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	MW
Speedy Dry	NQ	MW
JP-4	3000	REC
Oil	300	POL
TOTAL:	3300	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: 314 TRANS Special Purpose Maint Building: 549

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Oil & Fluid	1800	POL
Antifreeze	120	DD
Speedy Dry	NQ	MW
Citrikleen	240	DRMO
Cleaning Rags	NQ	MW
TOTAL:	2160	

SHOP: 314 TRANS Vehicle Maint Building: 550

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Citrikleen	NQ	DRMO
Floor Drain Sludge	NQ	MW
Batteries	144	REC
Omega Soap	660	OWS
Antifreeze	120	DD
Oil & Fluid	900	POL
Speedy Dry	NQ	MW
Cleaning Rags	NQ	MW
Fuel	NQ	REC
TOTAL:	1824	

SHOP: HOSP Dental X-Ray Building: 1090

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Fixer	24	SRDD
Developer	24	DD
TOTAL:	48	

DISPOSAL PRACTICES BY SHOP AT LITTLE ROCK AFB (Cont'd)

SHOP: HOSP Medical X-Ray **Building: 1090**

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Fixer	720	SRDD
Developer	720	DD

TOTAL: 1440

LEGEND:
- SRDD - SILVER RECOVERY THEN DOWN DRAIN
- POL - PETROLEUM, OILS, & LUBRICANTS
- HW - DISPOSED AS HAZARDOUS WASTE
- NDD - NEUTRALIZED THEN DOWN DRAIN
- SBC - SERVICED BY CONTRACTOR
- DRMO - DISPOSED THROUGH DRMO
- OWS - OIL/WATER SEPARATOR
- PAT - DISPOSED BY PATRON
- MW - MUNICIPAL WASTE
- DD - DOWN DRAIN
- REC - RECYCLED

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